Phenotypic Associations of Fiber Quality, Loan Value and Lint Yield between Commercial Cultivars, Segregating Lines and Mutant Lines of Upland Cotton. (C01-bechere163633-Poster)

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Abstract:

Understanding the phenotypic associations between fiber quality, fiber yield and how these factors effect loan values across an array of genetic materials is crucial for success in cotton breeding programs. These associations were studied by using correlations, linear regression and broad sense heritabilities on data collected on 11 commercial varieties, 19 segregating and 19 mutant lines grown across five locations in West Texas during 2000 and 2001. Highly statistically significant differences were observed between the segregating lines, mutants and commercial varieties for fiber length, fiber strength, loan value and lint yield (except the mutants). Results for the regression analysis showed that loan value and fiber length showed the strongest positive and significant associations (R2 = 0.57** to 0.70**) followed by lint yield and fiber length (0.26** to 0.49**) and fiber yield and loan value (0.22** to 0.30**). Overall, non-significant regression coefficients and correlations were observed between lint yield and fiber strength as well as loan value and fiber strength. Broad sense heritabilities across all groups were the highest for fiber length followed by fiber strength. The results suggest that lint yield, fiber length and loan value should be the most productive selection indices for cotton breeders. The mutants, in general, had higher value for lint yield, fiber length and fiber strength when compared to the segregating lines and commercial varieties. The segregating lines did not perform as expected which may be due to lack of genetic diversity within the parental stocks used to make these crosses.

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